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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/075,936	01/25/2002	James J. Croft III	T9574.NP	2517

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EXAMINER

DABNEY, PHYLESHA LARVINIA

ART UNIT

PAPER NUMBER

2643

DATE MAILED: 09/29/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/075,936

Applicant(s)

CROFT ET AL.

Examiner

Phylesha L Dabney

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 June 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-47 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-10 and 23-32 is/are allowed.
- 6) ☒ Claim(s) 11-22, 33-39, 41-43, 45-47 is/are rejected.
- 7) ☐ Claim(s) 40 and 44 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

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DETAILED ACTION

This action is in response to the application filed on 25 January 2002 in which claims 1-47 are pending. An objection to the IDS in that a copy of W/O 01/18449 was not provided. The applicant requests reconsideration. The reference was received and a supplemental copy of PTO 1449 form is needed.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

1. Claims 11-20, 33-35, 36-39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kopinga (U.S. Patent No. 4,527,017), and further in view of Torgeson (U.S. Patent No. 4,468,530).

Regarding claims 11-13, and 15, 33-35, and 37-38 Kopinga et al teach a planer magnetic transducer including: a vibratable diaphragm (5) including conductive paths (6, 6', 6''), a primary magnetic structure (figs. 1-4, upper magnetic structure) including at least three elongated magnets, and at least one secondary magnet (figs. 1-4, lower magnetic structure) having fewer magnets positioned on the opposite side of the diaphragm, wherein the magnetic structures and diaphragm are arranged in a predetermined spaced apart relationship. Kopinga et al does not teach a mounting support structure. Torgeson teaches a mounting supporting structure (figs. 1-8,

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16, 17, 22, 24-25, 37, 39, spacer), for aligning and securing the primary and secondary magnetic structures to the diaphragm beneficially providing air gap spacing. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the mounting support structure to the invention of Kopinga as taught by Torgeson for supporting spaced apart transducer parts. Furthermore, the combination of Kopinga and Torgeson does not teach the energy product (BHmax) of the magnets used in the structure. The energy product of a magnet is determined by the type of magnetic material used in its composition. It is known that if rare earth metals, such as samarium or neodymium, is combined with other metal alloys, such as cobalt or iron, then a magnetic composition having an energy products above 25 mega Gauss Oersteds is obtainable and the magnetic composition will be lighter in weight and highly coercive. The examiner takes official notice that it is known in the art to use these metal compositions in planar magnetic transducers to reduce the weight of the structure and improve the coercive force in planar transducer necessary for the production of high, mid, and low frequency sound. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to make the magnetic structure of Kopinga and Torgeson using a samarium or neodymium magnetic composition to reduce the weight of the structure and improve sound production.

Regarding claims 14 and 20, the combination of Kopinga and Torgeson teaches all of the limitations except having the predetermined spaced apart relationship of the diaphragm from the magnets of the primary magnetic structure being greater at a central region of the diaphragm over at least one central magnet than at the remote regions over at least one remote magnet. With respect to this spacing, the examiner takes official notice that it is known to vary the spaced

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relationship of the diaphragm from the magnetic structure at select locations to prevent distortion from the diaphragm inadvertently contacting the magnets of the magnetic structure, thus improving the sound quality. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to space the diaphragm from the magnetic structure at a greater distance at the central region of the diaphragm relative to remote region of the diaphragm to prevent distortion of the diaphragm at its central less restrictive region relative to the remote restrained (by the mounting support) region of the diaphragm for sound improvement.

Regarding claim 16, the combination of Kopinga and Torgeson teaches the secondary magnetic structure is less than 60% of the magnets of the primary magnetic structure (fig. 4; col. 4 lines 18-20).

Regarding claim 17, the combination of Kopinga and Torgeson teaches the secondary magnetic structure is less than 40% of the magnets of the primary magnetic structure (fig. 4; col. 4 lines 18-20).

Regarding claim 18, the combination of Kopinga and Torgeson teaches the secondary magnetic structure is no more than 20% of the magnets of the primary magnetic structure (fig. 4; col. 4 lines 18-20).

Regarding claim 19, as best understood, the combination of Kopinga and Torgeson teaches the secondary magnetic structure has one row of magnets centered in a side-to-side relationship on the planar-magnetic transducers (fig. 4; col. 4 lines 1-20).

Regarding claim 36, the combination of Kopinga and Torgeson does not teach the primary magnetic structure intermediate two diaphragms. However, the examiner takes official notice that it is known to include another diaphragm to increase the power output. Therefore, it

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would have been obvious to one of ordinary skill in the art at the time the invention was made to include an additional diaphragm in the invention of Kopinga and Torgeson for the reason stated above.

Regarding claim 39, the combination of Kopinga and Torgeson teaches the support structure further comprises a perforated area having a multiplicity of small closely spaced perforations (Kopinga, 9; Torgeson, 60) providing more acoustic transparency in that area.

2. Claims 21-22, 41-43, 45-47 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kopinga (U.S. Patent No. 4,527,017).

Regarding claims 21-22, 41-43, and 46-47, Kopinga teaches a planar-magnetic transducer which includes: a vibratable diaphragm (5) and attached conductive area (6, 6', 6'') capable of interacting with a magnetic field to convert an audio signal to acoustic output from the diaphragm; an arrangement of primary magnetic structure (figs. 1-4) positioned proximate to one side of the diaphragm for providing a desired magnetic field; at least one (but fewer than all) magnets comprising the primary magnetic structure) secondary magnet (figs. 1-4) positioned on an opposing side of the diaphragm in a position which enhances acoustic output of the diaphragm. Kopinga does not teach any magnetic field strength, including the magnetic field strength being greater towards a central portion of an active area of the diaphragm between locations wherein the diaphragm is constrained from movement and generally decreases moving away from a central portion outward toward edges of the active area in at least one dimension. However the examiner takes official notice that it is known to combine rare earth metals with other metal to achieve various magnetic compositions exhibiting different volume, magnetism,

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coercive strength, etc., necessary for producing different frequency responses in the high, mid, low frequency ranges. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use any metal composition in the invention of Kopinga as needed for achieving different frequency ranges.

Regarding claim 45, Kopinga does not teach the transducer having at least two diaphragms.

However, the examiner takes official notice that it is known in the art to include another diaphragm to increase the power output. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include an additional diaphragm in the invention of Kopinga for the reason stated above.

Allowable Subject Matter

3. Claims 1-10 and 23-32 are allowed.
4. Claims 40 and 44 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

5. With respect to the applicant's arguments that the Kopinga, or Kopinga and Torgeson combination does not teach an uneven magnetic field strength across the diaphragm such that the field strength is greatest at the central portion of the diaphragm, the examiner disagrees.

Kopinga and Torgeson do not include or exclude having a variable field strength distribution, but

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since it is known to have any combination of magnetized metal alloys to achieve the desired frequency, it is conceivable that the combination of references would be capable of performing a variable field strength distribution utilizing any magnetic composition to obtain a desired frequency range. Therefore, the examiner contends that the combination applies.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Phylesha L Dabney whose telephone number is 703-306-5415. The examiner can normally be reached on Mondays, Tuesdays, Wednesdays, Fridays 8:30-5 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Curtis Kuntz can be reached on 703-305-4708. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

PLD

September 12, 2004


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